MOISTURIZING HAIRDRESSING APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a moisturizing hairdressing apparatus for supplying steam or the like to one's hair, to be used in a beauty salon, a barbershop, etc.

2. Description of the Related Art

A conventional apparatus for supplying steam to one's hair for use in a beauty salon, a barbershop, etc., is found, for example, in Patent Literature 1 cited below, which discloses a hair moisturizing apparatus.

The hair moisturizing apparatus disclosed therein is configured to generate steam in a steam generating pot, such that the steam that has been generated is supplied through a steam conducting tube and a stretchable bellows hose into a cap put on one's head so as to cover his/her hair. Droplets that have emerged through dew condensation in the cap are discharged to a drain tank through an opening provided at a bottom portion of a U-shaped curvature formed halfway through the steam conducting tube.

Japanese Unexamined Patent Publication No. Hei-10-323213 teaches one known configuration. However, according to such

configuration of the apparatus, it takes a long period of time to provide sufficient moisture over the entire head of hair because the steam that has been generated is directly utilized as it is. Furthermore, since the entire head is covered with a cap it is impossible to moisturize only a part of the head of hair when necessary, nor to simultaneously perform another job such as brushing the hair. Naturally it is desirable that another hair-care process can be simultaneously performed during use of such an apparatus.

Accordingly, a hairdressing apparatus that permits appropriate moisturization of a desired portion of one's hair, and performance of additional care processes whenever necessary, has been required.

SUMMARY OF THE INVENTION

The present invention relates to a moisturizing hairdressing apparatus including a main unit and a handpiece. The main unit generates steam to moisturize one's hair. The handpiece movably attached to the main unit is provided with a steam injecting unit for injecting the steam supplied by the main unit and a negative ion injecting unit for injecting negative ions. In this apparatus, injection of either steam or negative ions, or simultaneous injection of both can be

selectable.

According to such a configuration, the apparatus permits the operator to inject steam to a desired portion simply by bringing the handpiece thereto. Furthermore, the handpiece can also inject negative ions. The negative ions can be injected alone or simultaneously in combination with steam.

In the present invention, additionally, it is preferable that the moisturizing hairdressing apparatus includes a switching mechanism for selecting a first operation mode and a second operation mode. In the first operation mode, at least one of steam and negative ions is injected when a switch remains held. In the second operation mode, the continuation of an injection or suspension of injection of at least one of steam and negative ions is controlled in compliance with a touch of another switch.

As a result of such a configuration, the first mode can be preferably selected for intermittent injection to a desired portion, while the second mode can be suitably selected when continuing the injection for a long period of time. When an operator must handle other tools during the injection process the first mode is more convenient, while when the operator wishes to inject evenly over an entire object the second mode is more effective.

According to the present invention, injection can be executed from a handpiece that can be moved with respect to a main unit, and injection of either steam or negative ions or simultaneous injection of both can be selected. Therefore, it is possible to appropriately moisturize a desired portion, and to inject negative ions whenever necessary.

BRIEF DESCRIPTION OF THE DRAWING

Fig. 1 is a block diagram showing a configuration of a moisturizing hairdressing apparatus according to an embodiment of the present invention;

Fig. 2 shows an example of an operation panel;

Fig. 3 is a cross-sectional view showing a handpiece; and

Fig. 4A is a perspective view of a negative ion injecting unit.

Fig. 4B is a cross-sectional view of a negative ion injecting unit.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the accompanying drawings, an embodiment of the present invention will be described in details.

As outlined in Fig. 1, a moisturizing hairdressing

apparatus 1 according to this embodiment is provided with a main unit 2 for generating steam and a handpiece 4 connected to the main unit 2 through a supply hose 3 for injecting steam or negative ions into one's hair.

The main unit 2 is provided with a steam pot 11 for generating steam, a purified water tank 12 from which purified water is supplied to the steam pot 11, a control unit 13 for controlling supply of the purified water or steam generation, an operating unit 19, and a power source, a drain cock for discharging water, etc., which are omitted from the drawing.

The steam pot 11 has a capacity sufficient to temporarily store a predetermined amount of purified water, and is provided with a heater 14 therein for heating the purified water. Also, the steam pot 11 is provided with a level sensor 15 for detecting a water level of the purified water. The purified water heated up by the heater 14 converts to steam, and the steam is guided to the supply hose 3 through an opening 11a located at an upper face of the steam pot 11 and a conducting tube 16a.

The purified water tank 12 is detachably installed at an upper portion of the main unit 2, for storing the purified water to be supplied to the steam pot 11. The conducting tube 16b connecting the purified water tank 12 and the steam pot 11 is provided with a valve 18, so that the control unit 13

controls the valve 18 for adjusting a supply amount or a supply timing of the purified water from the purified water tank 12 to the steam pot 11. Here, the supply amount or supply timing of the purified water is to be determined by the control unit 13 once the level sensor 15 has detected that the water level in the steam pot 11 has fallen below a predetermined value.

The operating unit 19 is provided with a main power switch of the moisturizing hairdressing apparatus 1, a switch for selecting either steam injection or negative ion injection and so on, for accepting an operation of an operator. Fig. 2 shows an example of an operation panel by which the steam injection, etc., can be selected. The operation panel 51 is provided thereon with a negative ion injection selecting button 52 and an LED 53 for confirmation of the selection, and also a steam injection selecting button (activation of the heater 14 in Fig. 1) 54 and an LED 55 for confirmation of the selection. In addition, an LED 56 showing an on/off status of the power, an LED 57 for alerting an abnormal level in the steam pot 11, and an LED 58 for alerting an abnormal temperature are also provided on the operation panel 51.

The supply hose 3 is comprised of a bendable flexible tube, and an end portion 3a thereof is attached to the main unit 2 via an attachment 17. The other end portion 3b is

connected to the handpiece 4 for injecting steam into one's hair. The attachment 17 is rotatably supported by the main unit 2, so that an entirety of the supply hose 3 can be rotated with respect to the main unit 2. Also, the handpiece 4 is attached to the supply hose such that the handpiece 4 can rotate around a longitudinal axis of the supply hose 3. Because of the supply hose 3 being bendable and rotatably attached to the main unit 2, and the handpiece 4 being rotatably attached to the supply hose 3, it is quite easy for an operator to move the handpiece 4 to a desired position for injecting steam. Further, it is preferable to provide a stopper on the main unit 2 for restricting a rotating angle of the attachment 17, in order to prevent a portion of the supply hose 3 close to the attachment 17 from being oriented downward to form a U-shape or the like when the supply hose 3 is rotated together with the attachment 17.

The handpiece 4 is provided with a hand grip 21 to be held by an operator, and a lower end portion of the hand grip 21 is connected to the supply hose 3. The hand grip 21 is provided with a trigger switch 22 for locally controlling injection of steam or negative ions. Further, a portion of the handpiece 4 extending from an upper end portion of the hand grip 21 is formed in a protruding shape, thus comprising a projecting

section 23 containing therein a steam nozzle, etc.

As shown in the cross-sectional drawing of Fig. 3, the hand grip 21 internally contains a pipe 31 for conducting the steam supplied through the supply hose 3 to an injecting unit 42, and is provided with the lever-type trigger switch 22 and an associated circuit 32, and also a negative ion generating unit 33 for generating a high voltage to inject negative ions, respectively disposed at remaining positions inside the hand grip 21.

The projecting section 23 has a larger space than the pipe 31 because of its protruding shape. Inside the projecting section 23, a negative ion injecting unit 34 for injecting negative ions and a steam injecting unit 35 for injecting steam are adjacently disposed in a vertical direction. The negative ion injecting unit 34 and the steam injecting unit 35 are oriented so that a longitudinal side thereof becomes substantially parallel to a protruding direction (the arrow A in Fig. 3) of the projecting section 23, so that negative ions and steam are respectively injected through a nozzle cap 36 attached to a front end portion 23a of the projecting section 23. Also, an LED 37 for showing that negative ions and/or steam are being injected, and a press-button type selecting switch 38 for performing continuous injection of negative ions and/or steam

are provided at a rear face 23b of the projecting section 23. The selecting switch 38 serves to select either on or off of the contact upon being pressed by an operator, and to maintain the selected state until a subsequent pressing. Meanwhile, the trigger switch 22 keeps the power on while the lever is being held by a finger or the like, but turns off the power once the finger is removed.

The steam injecting unit 35 is comprised of an injection chamber 41, which is a container having a predetermined capacity, and an injecting tube 42 including an injecting nozzle 42a through which steam is to be injected.

The injection chamber 41 is provided with a slanted face 45 located between its front face 43 on the side of the front end portion 23a of the projecting section 23 and its downwardly located bottom face 44 on the side of the pipe 31, so as to reduce a longitudinal cross-sectional area of the injection chamber 41 (in a direction parallel to the arrow A). Also, another slanted face 47 is provided between a rear face 46 opposite to the front face 43 and the bottom face 44, so as to reduce the longitudinal cross-sectional area of the injection chamber 41 (in a direction parallel to the arrow A). These slanted faces 45 and 47 serve to return droplets produced by dew concentration to the main unit 2 through the pipe 31.

The injecting tube 42 is comprised of a cylindrical pipe for urging the steam supplied to the injection chamber 41 to be injected outward, and is inserted into the injection chamber 41 through the front face 43. An opening provided at an end portion of the injecting tube 42 is exposed from the front face 43 to comprise the nozzle 42a. On the other hand, an opening 42b provided at the other end portion of the injecting tube 42 is located closer to the rear face 46 of the injection chamber 41 than a longitudinal extension B (shown by dot-dashed line in Fig.3) of the pipe 31 extrapolated from the opening 31a, therefore droplets are prevented from being injected directly to one's hair. Meanwhile, the droplets hit an outer surface of the injecting tube 42 or an inner wall of the injection chamber 41 and flow down to the bottom face 44, wherein they return toward the main unit 2 through the pipe 31.

Referring to Figs. 4A and 4B, the negative ion injecting unit 34 is comprised of a holder 61 of a hollow rectangular parallelepiped form and a needle pin 62 fixed at the center of a cylindrical space 66 provided inside the holder 61. The needle pin 62 is fixed along a longitudinal direction of the holder 61 at the center thereof, penetrating through a wall face 61a, and a high voltage is to be applied to the needle pin 62 through a wiring (not shown) connected to an end portion

62a of the needle pin 62. The holder 61 includes a front face 64 confronting the other end portion 62b of the needle pin 62 which is sharply pointed, and a bottom face 65 extending further forward from the front face 64. The extended portion 65a of the bottom face 65 serves to impede the negative ions emitted from the needle pin 62 from being attracted toward the steam injecting nozzle 42a (Ref. Fig. 3) disposed right below the holder 61, and the entire holder 61 is insulated.

Now according to Fig. 1 through Fig. 4B, operation of the moisturizing hairdressing apparatus 1 comprised as above will be described hereunder.

First, when injecting steam to a subject's hair, an appropriate amount of fresh purified water is deposited in the purified water tank 12 and the steam pot 11 respectively, and the power is turned on at the main unit 2. An operator takes up the handpiece 4 and presses the button 54 of the operation panel 51 as shown in Fig. 2 to select steam generation. At this stage the LED 55 on the operation panel 51 lights up to notify the operator that steam has been selected, and the operating unit 19 of Fig. 1 outputs a selection signal for notifying of the selection of steam to the control unit 13. Then according to a controlling action of the control unit 13 the heater 14 in the steam pot 11 is activated, so that the

purified water is heated up.

Then the operator directs the nozzle cap 36 of the handpiece 4 toward the subject's hair and pulls the trigger switch 22. This turns on the contact of the trigger switch 22, so that the circuit 32 (Ref. Fig. 3) connected thereto outputs an injection instructing signal to the main unit 2. According to a controlling action of the control unit 13 a temperature setting for the heater 14 in the steam pot 11 is raised so that evaporation of the purified water begins.

Thereafter, the purified water is guided to the handpiece 4 through the supply hose 3 in a form of steam, and is injected toward the subject's hair through the nozzle cap 36 (more specifically from the nozzle 42a). The operator can move the handpiece 4 to a desired portion of the subject's hair, thus continuing the moisturizing process. In a case where the steam injection becomes temporarily unnecessary, for example when changing a position of the handpiece 4, the operator can release the trigger switch 22. Since the trigger switch 22 is urged to turn the contact off, releasing the trigger switch 22 suspends the output of the injection instructing signal. Accordingly temperature inside the steam pot 11 drops to a predetermined temperature and the steam generation is suspended. However, when the trigger switch 22 is pulled again, the steam generation

is started as described above and the steam injection is restarted toward the subject's hair. Meanwhile, a predetermined temperature that suspends the steam generation is to be set at a level that can maintain a sufficiently high temperature of the purified water in the steam pot 11 so that steam can be promptly generated once the trigger switch 22 is pulled again.

Second, when injecting negative ions to the subject's hair, the operator releases the trigger switch 22 to suspend the steam injection. Then the operator presses the button 54 on the operation panel 51 of the main unit 2, to extinguish the LED 55 indicating the selection of steam. The operator then presses the button 52 to light up the LED 53 indicating the selection of negative ion injection. Accordingly, a selection signal for notifying that the negative ion injection has been selected is input to the control unit 13.

Once the operator pulls the trigger switch 22 at this stage, the circuit 32 (Ref. Fig. 3) outputs an injection instructing signal to the control unit 13. The control unit 13 supplies the power to the negative ion generating unit 33 in the handpiece 4 according to the selection signal already received and the injection instructing signal. The negative ion generating unit 33, upon being activated by the power,

generates a high voltage and applies the high voltage to the needle pin 62 of the negative ion injecting unit 34. The negative ions thus generated by the needle pin 62 are injected through the opening provided in the nozzle cap 36 toward a grounded human body, i.e. the subject's hair. For suspending the negative ion injection, the operator releases the trigger switch 22.

For shifting to steam injection again from the negative ion injection, the operator presses the button 52 for negative ion selection to extinguish the LED 53 and presses the button 54 for steam selection to light up the LED 55.

Further, the moisturizing hairdressing apparatus 1 is also capable of injecting both of steam and negative ions. In this case, the operator presses both the button 52 for negative ion selection and the button 54 for steam selection, to light up both LED's 53 and 55. Upon pulling the trigger switch 22 under such setting, the control unit 13 raises the temperature of the purified water in the steam pot 11, and also supplies the power to the negative ion generating unit 33. Since injecting positions thereof are quite close to each other, the negative ions can be simultaneously injected to the subject's hair while moisturizing the hair by steam.

During the foregoing operation, the operator can also

press the press-button type selecting switch 38 instead of pulling the trigger switch 22. In this case, pressing the selecting switch 38 causes the circuit 32 to similarly output an injection instructing signal to the control unit 13, and continues to output the same signal until the selecting switch 38 is pressed again. Accordingly, since the steam injection is continued once the selecting switch 38 is pressed, the operator does not have to keep pulling the trigger switch 22 when he/she wishes to continue the steam injection for a long period of time, which is a significant advantage.

Also, the LED 37 is located at the rear face 23b for confirmation of an operating status of the trigger switch 22 and/or the selecting switch 38, such that the LED 37 lights up while a steam generation instruction is effective (while the trigger switch 22 is pulled or when the selecting switch 38 is pressed down), and extinguishes when suspension of the steam generation is instructed (when the trigger switch 22 is released or the selecting switch 38 is pressed back). Therefore, the steam generation status can be visually confirmed upon checking the LED 37.

As described above, according to this embodiment an operator can perform a job holding in hand the handpiece 4 for injecting steam. Also, a start or suspension of the steam

injection can be locally selected by the same hand holding the handpiece 4. Accordingly, it becomes possible to sufficiently moisturize a desired portion of a subject's hair for a permanent wave or hair coloring process. In addition, injecting negative ions promotes an effect of hair care or coloring. Further, providing two types of switches that perform different functions permits selection of two injection modes, thereby improving work efficiency. Here, "two injection modes" refers, as already described, to a first mode of performing the injection only while the trigger switch 22 is pulled, and a second mode of selecting either injection or suspension of the injection by the selecting switch 38, so that the injection continues or remains suspended. The first mode is effective for appropriate injection to a desired portion, while the second mode is effective for injection over an extensive area.